these races. He described the causes that led to the architecture of the petty clans, such as a need of protection which induced them to seek the caves in cliffs, and traced the history of the "Pueblo" or communal dwellings. The art of pottery, he said, was practised in the "Pueblo" district to a very great extent. He gave an interesting account of the formation of the Zuni gourds, or water vessels, showing how they were covered with wickerwork in order to preserve them. Basket-work vessels were also used, these latter being covered with a preparation of clay in order to prevent the escape of the contents. Mineral coal was used in the manufacture of earthenware vessels and also upon the corrugated surface given to the bowls. A curious fact with regard to the food utensils of the Zunis was that they regard the bowls they make as possessing something in the nature of life or spirit. They place food and water near the vessel, and as a woman completes it she imagines she has made something like a created being. The different sounds made by the pots as they are struck, or as their contents boil, for instance, are believed to be the voices of the beings which are associated with the vessels. Apertures or blank spaces are left for the escape of this spirit. A Zuni woman, as she closes the apex of a pointed clay vessel, turns her eyes away, and says that it is "fearful" to watch this operation. She thinks that if she knowingly (that is in her sight) closes this orifice, which she regards as a source of life, the source of life in herself may be closed, and that she may be debarred from the privilege of child-bearing. Other evils are also expected to follow if she does not turn away as she completes the vessel's shape by closing the apex. The Zunis, in representing animals, always show a kind of line or passage leading from the throat to the heart, and cannot be induced to dispense with this line in any pictorial representation of animals. In conclusion, the reader of the paper referred to the probable origin of the shapes used in the pottery of America.

Dr. Daniel Wilson then read a paper on *The Huron-Iroquois, a Typical Race of American Aborigines.*—He remarked upon the natural boundaries of countries, and the difficulties they presented to nomadic races. East of the Rocky Mountains the ethnology was comparatively simple. There were but three great races or families, the Iroquois, the Algonquin, and the Athabascan. The Blackfeet were, however, a different race, and possessed different characteristics. West of the Rocky Mountains the subdivisions were more numerous, but not so large. He mentioned the valuable though imperfect vocabulary of Jacques Cartier, which showed something of the language used by the Iroquois or Six Nations. He enumerated the nations of which this confederation was composed, and remarked upon the localities in which they lived. The original native population of this part of Canada, Dr. Wilson said, was the Huron-Iroquois. They were found in the valley of the St. Lawrence by the early explorers. Some of them had been driven out and had returned to Canada at the time of the American Revolution, in one case, he said, bringing with them the silver communion service given to the Mohawk church by Queen Anne, and now used in the Tuscarora church. Dr. Wilson referred to the Indians of Lorette and of Anderdon as representing the ancient type of Hurons. These people, he said, believed that their ancestors came from the neighbourhood of the "great sea" or the Atlantic. The speaker then showed a skull, probably that of a Hochelaga Indian, which had been found near this spot. This, he said, presented all the types of the Huron race. He contended that it was a Huron people that had been found here by Jacques Cartier, though he said that the funeral customs of that nation did not seem to have been practised in this district. These funeral customs, and the ceremony of the "feast of the dead" were described in an interesting manner by the Professor. Dr. Wilson remarked upon the want of knowlege of metallurgy shown by the inhabitants of North America, and the general slow progress in civilisation which was displayed by these people. Copper in large quantities was ready to their hand, but no trace of its being used was found, and the application of fire to the metal seemed not to be thought of. He noticed the earth-works of the Ohio Valley, which he said should be visited by the British visitors before their return to Europe. He concluded by referring to the influence that the half breed population of Manitoba might have in future times upon the inhabitants.

Dr. Tylor, after expressing his thanks to Prof. Wilson for his communication, called upon Mr. Horatio Hale to make some remarks upon the subjects on which the last speaker had touched. This Mr. Hale did, saying that the tradition amongst the Hurons was that their ancestors had moved westward from the districts in which they were found by Cartier. With regard to the question of the language of the Hurons as compared with that of the Iroquois, Mr. Hale read a letter from the Hon. Judge Force, of Cincinnati, who had studied this subject. Mr. Hale also made some interesting observations on the difference of pronunciation between these people, his remarks being listened to with deep attention.

Prof. G. Lawson read a paper on *Food Plants used by the Indians.* The Professor began by remarking on the various berries that were found on this continent, as well as the numbers of nut-bearing trees. He showed that the wants of the aborigines would be supplied by the natural products of the woods and fields, and spoke particularly of the wild potato of Nova Scotia, which was so well known among the Indians. Other plants noticed were the bean, fields planted with this vegetable being found by Columbus and by Jacques Cartier, and maize, which was also much used. Beans were grown among the Indian corn, which formed the main crop. Evidence showed that plants like melons, pumpkins, and others of the same nature were cultivated by the Indians. Columbus, in 1492, found these plants surrounding Indian villages in such a condition as proved that they were cared for.

Lieut. A. W. Greely exhibited a collection of photographs of Esquimaux relics.

Lieut. P. H. Ray read a paper *On the Habits and Customs of the Inu of the Western Shore and Point Barrow.* Many of the natives had been measured, and it was found that the tallest height was 5 feet 10 inches, and the lowest 5 feet 1 inch. This was much higher than the natives of Greenland. Their powers of endurance were wonderful. Marriage laws they had none: the contract was severed at will. They never quarrelled or entered upon any controversy, and were extremely kind to their parents. Lieut. Ray described the manner in which these people prepared their food for travelling, and in which they captured the reindeer and the seal. Though they did not believe in a future existence, they were intensely superstitious, as Lieut. Ray found when he learned their language, and they paid great veneration to the oldest of their women. He thought these people the most primitive that white people had ever come in contact with.

Mr. R. Law read a paper by himself and Mr. J. Horsfall, *On Some Small Flint Implements found beneath Peat on Several Elevated Points of the Pennine Chain lying between Huddersfield and Oldham.*—Mr. Law introduced his subject by saying that, though perhaps of a local nature, it might be interesting. In the course of his paper he said that the flint implements which had been discovered had been submitted to competent authorities, and it was considered that they were the smallest ever discovered in England. They were supposed to have been carving implements, and some of them were not more than one inch in length and a quarter of an inch in breadth, while they were carefully marked and chipped on the edges. The speaker concluded by describing the moorland country and geological character of the soil in which these implements were found.

SCIENTIFIC SERIALS

THE *Journal of the Franklin Institute* for August contains:—Wire triangular truss, by Chas. J. Quetil, C. and M.E. (illustrated).—New British standard wire gauge.—Report on the trial of the "City of Fall River," by J. E. Sague, M.E., and J. B. Adger, M.E., with an introduction by Prof. R. H. Thurston (continued from vol. cxviii. p. 74, illustrated, and with a table).—Tests by hydrostatic pressure, by S. Loyd Wiegand, M.E.—Velocity of approach in weir computations, by A. W. Hunking and Frank S. Hart (with tables).—The earth's ellipticity, by L. D'Auria.—Suggestions for the improvement in the manufacture of glass, by George W. Holley.—Survey of the future water-supply of Philadelphia, by Rudolph Hering, C.E.—Influence of high pressure on living organisms.—Atmospheric changes at Nice.—Bernauf's telescope.—Microscopic organisms on the surface of coins.—Magnetism in Madagascar.—Selective absorption of solar energy.—Use of oxygen as a refrigerant.

Annalen der Physik und Chemie, No. 8, July 1.—On a new method of determining the vapour-densities of bodies with a low boiling-point, by Nik. von Klobukow (10 figures and a table).—On a new method of determining the vapour-densities of bodies with high boiling-points, by Nik. von Klobukow (7 figures).—On the influence of pressure on the viscosity of liquids, particularly of water, by W. C. Röntgen (2 figures and 2 tables).—On the

influence of density on the viscosity of dropping liquids, by E. Warburg and J. Sachs.—On the conductibility of heat of tourmaline, by Franz Stenger (2 figures).—The expansion of crystals by heat, by Eug. Blasius (3 figures).—On the passage of electricity in gas, by F. Narr (with tables).—Remarks on the resistance box of Siemens and Halske, by E. Dorn (4 figures).—On the known dichromatic colour-systems, by Arthur König (1 figure).—On the sensibility of normal eyes for the perception of light of long wave-length, by Arthur König and Conrad Dieterici (1 figure and tables).—Metallic and total reflection of isotropic media explained by means of Neumann's system, by E. Ketteler.—Experimental determination of the wave-length of the invisible prismatic spectrum, by S. P. Langley (5 figures and table).—Demonstration research on the relation between light polarised by reflection and by refraction, by G. Krebs (4 figures).—On a freezing apparatus, by E. Lommæl (1 figure).

Journal de Physique théorique et appliquée, August.—On the electric conductibility of very weak saline solutions, by M. E. Bouty (7 parts, 30 pages, with figures and tables).—The influence of heat and magnetism on the electrical resistance of bismuth, by M. A. Righi.—Variation in the physical properties of bismuth placed in a magnetic field, by M. Hurion.—Variation of the resistance of bismuth and some alloys with the temperature, by M. A. Leduc.—On some experiments illustrating an explanation of Hall's phenomenon, by Shelford Bidwell.—Note on Hall's phenomenon, by Herbert Tomlinson.—The explosive wave, by MM. Berthelot and Vieille.—Researches on the compressibility of gases, by E. H. Amagat.—Memoir on the compressibility of air and carbonic acid at 1, 8, and from 20 to 300 atmospheres, by E. H. Amagat.—On a new form of the relation $F(pvt) = 0$, relating to gases, and on the law of the expansion of these bodies at constant volume, by E. H. Amagat.

SOCIETIES AND ACADEMIES

SYDNEY

Royal Society of New South Wales, August 6.—H. C. Russell, B.A., President, in the chair.—Four new members were elected. Donations received consisted of 327 vols. and pamphlets, forty-six anthropological photographs, and a collection of fossils.—A paper was read by Mr. Lawrence Hargrave on the trochoided plane. The paper was explanatory of some models of animal progression exhibited by the author before the Society, and gave in detail the opinions and deductions he had formed from his observations of the natural motions of animals. The author was of opinion that there was evidence to show that Nature almost universally used the trochoided plane for the transmission of force, and that its use by man opened up a wide field for engineers; he asked the opinion of the members whether there were grounds for believing that the trochoided plane was a distinct mechanical power, and if not under what head they classed it.

PARIS

Academy of Sciences, September 29.—M. Rolland, President, in the chair.—Remarks in connection with a work "On the Origin of the Earth," presented to the Academy by M. Faye. The book is described as mainly historical, recording the various theories on the cosmogony of the universe that have prevailed from primitive times down to the present day.—Observations on a preceding communication dealing with the theory of the form of the planets, by M. F. Tisserand.—On the vegetation of the Amaranthaceæ: distribution of the fundamental substances amongst the various parts of this family of plants and its congeners at the various periods of their growth, by MM. Berthelot and André.—A simple process for effecting the separation of cerium and thorium from mixtures in which these elements are found, by M. Lecoq de Boisbaudran.—On the solubility of the prussiate of gallium; rectification of a previous communication by M. Lecoq de Boisbaudran.—On the trinomial linear equation in matrices of any order, by Prof. Sylvester.—Report of the Commissioners, MM. Bouley, Bert, Gosselin, Marey, Pasteur, Vulpian, and Richet, on various communications touching the treatment of cholera. Of the eight communications received since the last report, five are undeserving of mention. The three others are rather theoretical than practical, and that of Dr. Pereda y Sanchez alone seems to contain a few suggestions worthy of further consideration.—On the second experiment made by MM. Tissandier brothers to propel a screw balloon by means of electricity, by M. G. Tissandier. This trial, made on September 26 at Auteuil with improved appliances, yielded all the results that could be expected from a balloon constructed with an exclusive view to experimental study. The vessel proved perfectly stable, obeying every movement of the rudder, and enabling the aëronauts to execute numerous manœuvres in various directions above Paris.—Observations of Barnard's comet and of Luther's planet made at the Observatory of Nice, by M. Perrotin.—Observations of Wolf's comet made at the Paris Observatory (equatorial of the West Tower), by M. G. Bigourdan.—Observations of the same comet made at the Paris Observatory (equatorial *coudé*), by M. Périgaud.—Observations of the same comet made on September 21 at the Observatory of Bordeaux with the meridian circle, by M. Courty.—Note on the group of points in involution marked on a surface, by M. Le Paige.—Description of a new polarising prism presenting some advantages over those of Nicol and of Hartnack and Prazmowski, by M. E. Bertrand.—Note on the products obtained from tellurium acted on by nitric acid, by MM. D. Klein and J. Morel.—On the employment of the sulphate of copper (blue vitriol) for the destruction of mildew, by M. Ad. Perrey. Vines recently treated with this solution in the department of Saône-et-Loire were everywhere distinguished from the surrounding plants by the bright green colour and healthy appearance of their foliage. But this remedy seems to be efficacious only in the case of young vines from four to six years old.—Report on the present climatic conditions and sanitary state of the isthmus of Panama, by M. R. Regnier. The prevailing notions regarding the insalubrity of this region appear to be unfounded. Its temperature varies from 24° to 30° C. in winter, rising to 35° in summer. The climate is hot and moist, with two seasons, summer and winter, the latter being the rainy season and the shorter of the two. Although the climate does not produce the same depressing effect on Europeans as many other tropical countries, certain hygienic precautions should be taken and scrupulously observed. Two large hospitals, one at Panama, the other at Colon, have been erected for the treatment of the men at present employed in the construction of the canal. A health resort has also been established at Taboga, and these various measures are stated to have reduced the mortality almost to a lower rate than in many great centres of industry. It is at present about 2·5 per cent., a proportion not exceeding the average of European countries.

CONTENTS